

## Claims

5

1. A three-phase synchronous reluctance motor comprising a rotor and a stator having a plurality of teeth formed in an inner face thereof along a peripheral direction and in opposition to said rotor, six of said teeth being in opposition to one of a plurality of rotor magnetic poles provided in the rotor, said stator having stator windings by a coil pitch corresponding to five teeth of said six teeth,

10 wherein in a back yoke portion of the stator corresponding to a tooth adjacent a tooth located between an adjacent pair of said stator windings which form magnetic poles in a same phase and with different polarities in a three-phase drive mode, there is provided at least one width reducing portion which renders a width of a magnetic path of the back yoke portion of the stator reduced relative to a width of a magnetic path of the back yoke portion corresponding to the other teeth.

20

2. A three-phase synchronous reluctance motor comprising a rotor and a stator having a plurality of teeth formed in an inner face thereof along a peripheral direction and in opposition to said rotor, six of said teeth being in opposition to one of a plurality of rotor magnetic poles provided in the rotor, said stator having stator windings by a coil pitch corresponding to five teeth of said six teeth,

25

wherein in a back yoke portion of the stator corresponding to a tooth located between an adjacent pair of said stator windings which form magnetic poles in a same phase and with different polarities in a two-phase rectangular wave drive mode, there is provided at least one width reducing portion which renders a width of a magnetic path of the back yoke portion

30

of the stator reduced relative to a width of a magnetic path of the back yoke portion corresponding to the other teeth.

3. The three-phase synchronous reluctance motor according to claim 1 or 2, wherein a center position of said width reducing portion and a center position of said tooth are aligned with each other along the peripheral direction of the stator, and said width reducing portion is formed along the peripheral direction of the stator by an area smaller than two pitches of the teeth.

10

4. The three-phase synchronous reluctance motor according to claim 1 or 2, wherein a plurality of said width reduced portions are provided along the peripheral direction of the stator by a pitch of  $n/3$  ( $n$ : a natural number) of the pitch of the rotor magnetic poles.

15

5. The three-phase synchronous reluctance motor according to claim 3, wherein a plurality of said width reduced portions are provided along the peripheral direction of the stator by a pitch of  $n/3$  ( $n$ : a natural number) of the pitch of the rotor magnetic poles.

20